Forestwide Aquatics Restoration Project

Silviculture Report

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for:
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Table of Contents

Introduction

The intent of this section is to report if the alternatives meet required standards and comply with laws, regulations, policies and plans that govern vegetation management. Many proposed vegetation treatments would not be implemented for commercial value. Instead, the composition and productivity of key riparian vegetation would be managed to improve or protect riparian-dependent and/ or ground water-dependent resources.

Relevant Laws, Regulations, and Policy

Regulatory Framework

Land and Resource Management Plan

The vegetation management projects that would be implemented would comply with the Forest Plan for the Umatilla National Forest (henceforth referred to as the Forest Plan) as amended, and be designed in accordance with the guidance of the Forest Service Handbook (FSH) 2409.17 Silvicultural Practices Handbook.

Other Laws and Regulations

The silviculture treatments developed for the projects that would be implemented within riparian habitats and ground water-dependent ecosystems would meet the requirements for the National Forest Management Act. Vegetation treatments would be chosen to enhance riparian-dependent resources and ground water-dependent ecosystems by managing vegetation species composition, density, and structure through time. Best Management Practices (BMPs) and Project Design Criteria (PDC) would be followed so there would be no permanent impairment to these ecosystems as a result of treatments.

Methodology and Assumptions

The projects that would be implemented would be restoration oriented and would not be for the purposes of providing commercial wood products. The basis of the affects analysis is the professional judgement developed over 18 years and studies conducted across the western United States including the Umatilla National Forest.

Spatial and Temporal Context for Effects Analysis

The spatial analysis area used to develop existing vegetative conditions and to assess direct, indirect, and cumulative effects to riparian vegetation includes the area encompassed by the Umatilla National Forest boundary. The Forestwide Aquatics Restoration Project Area is used for all measures because it encompasses complete watersheds that can be used to assess effects to riparian vegetation at both mid-scale landscape and fine-scale stand.

The temporal scale of the analysis is approximately 20 years. Effects to vegetation can be modeled for longer time frames but confidence in the modeled outputs decline beyond 20 years because the accumulation of assumptions and unknowns. Between year 20 and 100, general estimations about tree growth can be made, but calibrating the model to estimate real-world parameters becomes difficult.

Affected Environment

Existing and Desired Condition

Existing Condition

The condition of the riparian vegetation across the forest is as diverse as the vegetation itself. In some instances the vegetation is within the range of variation and providing the necessary nutrients, shade and large woody debris essential for riparian and stream health. Other areas are outside the desired range of variation due to encroachment and overabundance of conifers. A lack of natural disturbance such as fire with natural recovery, and historically high grazing pressure have factored into the changes in some riparian vegetation (Batchelar, 2015; Van de Water, 2010).

Van de Water and North along with others have studied historical fire in riparian areas. They have noted that in lower elevations the fire return interval and fire severity is very similar to the upland forest. Hunsaker and Long highlighted Fisk et al's work which noted that lower order streams also burned similar to the upland forest (2014). In the higher elevation the fire return interval is longer and more severe than the upland forest. They speculate the reason for this is that the higher elevation riparian areas have greater moister content and lower temperatures may have acted as buffers to fire movement under non-drought conditions. Conversely, these higher elevation riparian areas would accumulate higher fuel loads because of their high productivity and then burn at higher severity under extreme drought conditions (Van de Water, 2010). Halofsky and Hibbs noted that plant association was the strongest predictor of riparian overstory fire severity (2008). All this documentation establishes that fire is an integral process in the health of riparian areas and the lack of fire within the historic fire return interval would cause changes within these highly productive areas.

Treatments to improve or maintain vegetation associated with ground water-dependent ecosystems would focus on western juniper removal. Western juniper have the ability to affect the output of ground water like springs because of their ability to continue to take up water, and therefore transpire, in soil temperatures of 40°F which would cause greater winter soil water loss (Miller, 2005). Miller et al also modeled soil water depletion rates of both dry years and wet year and determined that regardless of whether the year was wet or dry, juniper would shorten the growing season on sites, and in some uncut stands of juniper the growing season could be reduce by 6 weeks (2005). Several reports have noted an increase in the density and range of western juniper after 1870. Miller et al suggests that 1870 is the separation between pre- and post-settlement and is the approximate time when the fire regimes changed do to the arrival of livestock with first settlers in eastern Oregon, Idaho, and northeastern California (2005). The increase in western juniper density and range could adversely affect the availability of water in these ground water-dependent ecosystems.

Desired Condition

The desired condition is to have healthy, sustainable riparian vegetation within the range of variation capable of providing sustainable large woody debris to the stream courses and micro and macro nutrients to the riparian system. Additionally, the desired condition of ground-water ecosystems is to have healthy, sustainable vegetation that is within the range of variation for species composition, density, and structure capable of supporting these ground-water ecosystems through time.

Environmental Consequences

Alternative 1 – No Action

There would be no changes in vegetation species composition, structure, or density within riparian areas or ground water-dependent ecosystems would occur from aquatic restoration activities. Over time species composition would shift more towards conifers as deciduous trees and shrubs become shaded out. Tree density would also increase through time and trees would compete for sunlight and nutrients. Only a natural disturbance such as flood, fire, or insects would alter the current trajectory of the riparian vegetation.

Alternative 2 – Proposed Action

Restoration activities would be variable based on the desired condition. In some instances, there could be a reduction of tree density or a complete change species composition and structure from conifer trees (true firs, pines, Douglas-fir, spruce, western larch, etc.) to deciduous trees and shrubs (aspen, cottonwood, willow, alder, etc.).

Direct and Indirect Effects - Alternative 2

A reduction in tree density would increase the growing space of residual trees providing more available moisture, nutrients, and light. This would improve the residual trees' health and increase growth helping some trees to achieve large-tree status in a shorter period of time. Other trees such as aspen and cottonwoods would grow into the space providing opportunities for ground vegetation.

Reduction of juniper densities within its home range would improve the availability of ground water allowing for more robust growth of residual vegetation and improve the overall health of the ecosystem and restore the area to its range of variate. Additionally, the influx of additional ground water into the system would also allow for more water to be available for wildlife and domestic animals.

Cumulative Effects – Alternative 2

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

The existing condition is the culmination of the past and present activities. The effects of proposed activities on riparian vegetation and ground water-dependent ecosystems would improve the overall health, species composition, density, and structure of the residual vegetation while restoring these areas to their range of variation.

Summary

All proposed treatments comply with relevant laws, regulations, policies, and the Forest Plan. The treatments proposed would improve the health of the residual vegetation and move areas into the desired range of variation.

Works Cited

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